What Is Claimed Is:

1. A process for recovering valuable metals from waste secondary batteries comprising lithium ion batteries, Ni-H batteries and Ni-Cd batteries, wherein said waste secondary batteries are calcined and sieved to generate an ash containing metals and metal oxides, said process comprising the following steps:

a) dissolving said ash with a 2N-6N sulfuric acid aqueous solution;

b) adding an alkali to the resulting solution from step a) so that cadmium (Cd) ions and rare earth metal ions contained in the solution precipitate;

c) performing a solid/liquid separation on the resulting mixture from step b);

d) extracting the resulting solution from the separation in step c) with a first organic extractant to form an aqueous layer containing nickel (Ni) ions and cobalt (Co) ions and an organic layer rich in Cd, iron (Fe) and zinc (Zn) ions;

e) extracting the aqueous layer from step d) with a second organic extractant to form an organic layer rich in Co ions and an aqueous layer rich in Ni ions;

f) counter extracting the organic layer rich in Co ions from step e) with a sulfuric acid aqueous solution to obtain an aqueous layer rich in Co ions;

g) using the aqueous layer rich in Ni ions formed in step e) as an electrolysis solution, and using a voltage of 1.5-4.0 volts to perform an electrolysis, thereby forming by reduction a Ni metal on a cathode in said electrolysis;

h) using the aqueous layer rich in Co ions formed in step f) as an electrolysis solution, and using a voltage of 1.5-4.0 volts to perform an electrolysis, thereby forming by reduction a Co metal on a cathode in said electrolysis;

i) adding a water soluble carbonate to a residue solution after the electrolysis in step g), thereby forming a precipitation of lithium carbonate.

2. The process according to claim 1, wherein steps a) and b) together comprises the following steps:

a1) dissolving said ash with a 2N-6N sulfuric acid aqueous solution;

a2) performing a solid/liquid separation on the resulting mixture from step a1);

a3) dissolving the solid resulting from the separation in step a2) with a 4N-12N sulfuric acid aqueous solution;

b1) evaporating water from the resulting solution from the resulting solution from the separation in step a2), so that a precipitate containing cadmium sulfate as a major portion thereof is formed therein;

b2) adding an alkali to the resulting solution from the dissolution in step a3), so that a precipitate containing a hydroxides of rare earth metal, $Fe(OH)_3$ and $Al(OH)_3$ as a major portion thereof is formed therein;

wherein the mixture formed in step b2) is subjected to the solid/liquid separation in step c).

3. The process according to claim 2, wherein the precipitate formed in step b1) contains 85% cadmium sulfate by weight of the precipitate.

4. The process according to claim 2, wherein aid alkali used in step b2) is sodium hydroxide and said sodium hydroxide added in step b2) is in an amount so that the solution has a pH value of about 6.

5. The process according to claim 2, wherein the mixture formed in step b1) is subjected to a solid/liquid separation, and the resulting liquid is used as a portion of the 4N-12N sulfuric acid aqueous solution used in step a3).

6. The process according to claim 1, wherein said water soluble carbonate in step i) is sodium carbonate.

7. The process according to claim 1 further comprising counter extracting the organic layer rich in Cd, Fe and Zn ions with a sulfuric acid aqueous solution to obtain an aqueous layer rich in Cd, Fe and Zn ions; and removing said Cd, Fe

and Zn ions from said aqueous layer rich in Cd, Fe and Zn ions by using an ion exchange resin.